OPERATIONS AND MAINTENANCE MANUAL

MODEL M-138

Contract Nº: 4522
ETC SOR Nº: 101785
June 1998

STERILIZER SAFETY PRECAUTION SUMMARY

WARNING

- BURN AND SHOCK HAZARD: High voltages are present in the electrical equipment that are harmful to human life. Any required repairs and adjustments must be accomplished only by authorized personnel who are fully acquainted with this equipment.

- BURN HAZARD: Hot steam is present in the piping equipment that is harmful to human life. Allow the sterilizer and accessory equipment to cool to room temperature before performing any maintenance procedures.

- BURN HAZARD: A steam supply malfunction may cause the sterilizer chamber to fill with scalding water. After the door has been unlocked, do not open the chamber door if water leaks out past the door gasket. Shut down the sterilizer steam supply, remove the water in the chamber after it has cooled and correct the malfunction.

- BURN HAZARD: The sterilizer and (if applicable) rack shelves in the chamber will be hot after a cycle has been run. Wear protective gloves and apron (also a face shield if processing liquids) when removing a processed load or reloading the sterilizer following a previous operation.

- EXPLOSION HAZARD: The sterilizer is not designed to process flammable liquids.

- SLIPPING HAZARD: Immediately wipe up any spillage or condensation in the sterilizer area.

ENVIRONMENTAL TECTONICS CORPORATION

RESUMEN MEDIDAS DE PRECAUCION

ADVERTENCIA

- **RIESGO DE QUEMADURA Y ELECTROCUTAMIENTO:** La maquinaria eléctrica posee alto voltage peligroso que puede causar daños personales. Cualquier tipo de reparación ha de ser llevada a cabo por personal autorizado con perfecto conocimiento de este tipo de maquinaria.

- **RIESGO DE QUEMADURA:** Las tuberías contienen vapor que puede causar daños personales. Deje el esterilizador y el equipo accesorio enfriar a temperatura ambiente antes de realizar cualquier tipo de reparación.

- **RIESGO DE QUEMADURA:** Una avería en el aprovisionamiento de vapor puede provocar que la cámara del esterilizador se llene de agua hirviendo. Una vez que la cerradura ha sido abierta si el agua gotea a través de la junta no abra la puerta. Cierre el aprovisionamiento de vapor del esterilizador, saque el agua de la cámara cuando haya enfriado y arregle la avería.

- **RIESGO DE QUEMADURA:** Una vez que un ciclo ha sido ejecutado, el esterilizador y las rejillas estarán calientes. Use guantes protectores y delantal cuando saque la carga esterilizada o cuando vaya a utilizar de nuevo el esterilizador (Cuando trate con líquidos también deberá usar máscara protectora).

- **RIESGO DE EXPLOSION:** Este esterilizador no está diseñado para tratar con líquidos inflamables.

- **RIESGO DE RESBALAR:** Seque inmediátamente cualquier tipo de derrame o condensación en el area del esterilizador.

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1.0 INTRODUCTION

The M-138 sterilizer is a portable, fully jacketed, horizontal pressure type vessel, designed for use under all field emergency conditions. It is suitable for sterilizing and drying surgical instruments, utensils, dressings, and flasked surgical solutions.

The sterilizer is manufactured from a welded aluminum alloy lightweight construction. The chamber assembly has internal dimensions of 16" diameter x 36" long. It is supported in a combination case at the backhead and end ring to provide rigidity and protection. When closed, this case completely encloses and protects the sterilizer and its heat source. The enclosure also serves as a shipping container, and when opened, provides a stand for the sterilizer. The use of the stand places the sterilizer and controls at a convenient working height. The case's design allows for stackability and protection of the sterilizer if roughly handled.

The sterilizer has universal shelves for four shelf levels. The top three in any combination provide flexibility for the sterilized loads. The shelves are removable and stack together for compact storage. The rear of the sterilizer has a jacket cleanout opening to remove foreign accumulations in the jacket. Use the provided scraper when cleaning the accumulations within the jacket.

The sterilizer design uses the jacket as a steam boiler. Steam can be produced by electric immersion heaters, or with the gasoline burner unit. The sterilizer can also be connected directly to a steam supply line. Connection to a steam supply requires the addition of a direct steam conversion unit.

Water is retained in the sterilizer jacket. When the sterilizer is heated, the hot gases are directed around the shell and out the vent pipes at the top of the sterilizer. The rear of the sterilizer has a water level indicator with a sight glass that is resilient mounted to prevent breakage. Steam is taken from the top front of the jacket and introduced into the chamber at the top rear. A baffle deflects the steam through the chamber, and exhaust air leaves at the front bottom of the chamber through a removable, screened outlet. A low water cut-off switch protects the electric heating elements.

The sterilizer has a single control multiport valve and vacuum drying system. With this arrangement, a single control valve directs the steam flow and exhaust by means of successive positions of the control knob. The control knob positions include slow exhaust and vacuum drying. During the vacuum drying, a slight vacuum is created in the chamber and clean, filtered air is then introduced into the chamber and vented to the atmosphere. With this process, the load is dried with the chamber door closed, minimizing the danger of contamination by outside air currents.

2.0 TABLE OF LEADING PARTICULARS

Overall length	46"
Width	24.5"
Height (Doors closed)	37-3/16"
Height (Doors Open)	62"
Weight	275 lbs.
with Gasoline burner	319 lbs.
with Steam conversion	288 lbs.
Power Requirements	Load/Fuse
220 VAC, 50 or 60 Cycle 1φ	45 A/50 A
380 VAC, 50 or 60 Cycle 3φ	15 A/20 A
220 VAC, 50 or 60 Cycle 3φ	25 A/30 A
208 VAC, 50 or 60 Cycle 3φ	25 A/30 A
440 VAC, 50 or 60 Cycle 3φ	15 A/20 A
440 VAC, 50 or 60 Cycle 1φ	15 A/20 A
Gasoline Unit	
	US National №7310-01-113-9172
Sterilizing Range	250°F and 270°F.

3.0 INSTALLATION

3.1 General

The sterilizer is self-contained and requires very little installation. Follow these steps to set up the sterilizer for operation:

1.) Open either side door and remove the gasoline burner.
2.) Tilt the unit lengthwise so that the front end is raised off the ground.
3.) Unlatch the door on the front end and swing it down 180° into place.
4.) Screw the two T bars on the door firmly into the case to anchor the door to the case.
5.) Unlatch the door on the back of the sterilizer.
6.) Raise the back end of the sterilizer, allowing the door to drop into place.
7.) Tighten the two T bars on the door firmly into the case to anchor the door to the case.
8.) Level the sterilizer as needed to ensure proper drainage of the condensate for effective operation. To ensure proper levelling, open the sterilizer door and pour a small quantity of water on the bottom of the chamber at the rear. The water should gently flow to the chamber drain in the front of the chamber.
9.) Arrange the shelves as desired.
10.) Check the chamber and jacket drain openings on the bottom of the case and remove any obstructions to the free flow of the water.

WARNING: Before operation, fully open the side doors on each end of the sterilizer to the leg position and securely fasten in place.

For indoor use, mount a funnel under the chamber drain and connect to a drain line. The vent line may be rotated to point in a convenient direction by loosening the fitting attaching it to the multiport valve, turning the tube to the desired position and then retightening the fitting. Attach a hose to the 1/2" OD tube vent to pipe the exhaust to the outside. Venting the exhaust prevents excessive humidification of the room air and possible damage to the tent. The following paragraphs give installation instructions for each heating unit type.

3.2 Electric Heat

To operate with electric heat, simply connect the sterilizer to the power supply. Remove the cover on the electric control box to access the terminal strip. The unit has been designed to operate on various power supplies. Inside the sterilizer rear cover are wiring diagrams for each variation.

220 VAC, 1φ, 50 or 60 cycle, 45 Amps, use wiring diagram A.
380 VAC, 3φ, 50 or 60 Cycle, 15 Amps, use wiring diagram B.
220 VAC, 3φ, 50 or 60 Cycle, 25 Amps, use wiring diagram C.
208 VAC, 3φ, 50 or 60 Cycle, 25 Amps, use wiring diagram D.
440 VAC, 3φ, 50 or 60 Cycle, 15 Amps, use wiring diagram E.
440 VAC, 1φ, 50 or 60 Cycle, 15 Amps, use wiring diagram F.

NOTE: Besides connecting the power supply correctly to the terminal strip, it may be required to change a connection between the heaters as noted on the appropriate wiring diagram.

For 440 volt power, change the connection on the contactor coil to the 440 volt terminal. For 440 volt operation (1 φ or 3φ), only two heaters will be used, with the unit operating on 2/3 wattage, thereby increasing the heat-up time. If 440 volt, 3φ, the heaters are connected across a single phase creating an unbalanced load. Operating with 208 volt power will also increase heat-up time because of the reduced wattage.

CAUTION: Ensure that the frame of the sterilizer is adequately grounded before operating with electrical power.

3.3 Gasoline Burner Unit

The sterilizer has a cavity designed to accept the gasoline burner unit used with the US Army field range. The gasoline burner is a US National stock Nº7310-01-113-9172. The burner unit uses any gasoline, leaded or unleaded. A pump is needed for creating the necessary air pressure in the tanks. Check the burner unit for leaks under air pressure before filling it with gasoline.

Both sides of the sterilizer fire box have a door to permit the burner unit to be inserted from either side. These doors have an adjustable chain to hold them partially closed, if required, to shield the burner from a strong wind.

CAUTION: Do not completely close these doors when the gasoline burner is in use, but rather keep the doors open at least several inches. The door in the top of the unit must be opened to permit venting of the hot gases from the burner.

WARNING: When gas burner heat is used while the sterilizer is in a confined space, vent the gas exhaust to prevent asphyxiation. Fit two 4" stovepipe flues to the top vent of the sterilizer. Run each flue independently to the outside.

3.4 Direct Steam Conversion

Remove the pipe plug from the right hand side of the heater flange. Connect the pressure regulator and supply the valve assembly to this opening. Connect the trap assembly to the opening from the drain valve. Connect the external steam supply at 50 to 80 psig to the steam supply valve.

NOTE: With this conversion unit installed, the sterilizer may be operated with either electric heat or gasoline burner by closing the steam supply unit valve and the drain valve.

4.0 OPERATING INSTRUCTIONS

4.1 Filling With Water

If the sterilizer is operated on electric power or gasoline heat, fill the jacket with water as pure as possible. Check the jacket at every cycle. Do not start a new cycle if the jacket contains less than 1/2 of its volume water. If the sterilizer is allowed to run dry, the low water shutoff will trip, interrupting the cycle.

Use of distilled water is preferred because it results in less frequent cleaning of the jacket interior.

CAUTION: Lift the relief handle of the safety valve or turn operating valve to the dry position to release any pressure in the jacket before removing the plug from the filling funnel.

To fill with water:

1.) Remove the plug from the filling funnel.
2.) Turn the operating valve to the sterilize position.
3.) Fill the jacket with water through the funnel until the sight glass shows full.
4.) Turn the operating valve to off.
5.) Replace the plug in the funnel.

4.2 Initial Procedure (Electric Heat)

CAUTION: Ensure that the frame of the sterilizer is adequately grounded before operating with electrical power.

1.) Check the sight glass to verify an adequate water level. Adequate level is at the 1/2 mark.
2.) Turn the pressure control switch knob to the maximum clockwise position.
3.) Ensure that the operating valve is in the off position.
4.) Turn the heat switch on to energize the heaters. The red pilot light glows.
5.) When the jacket pressure gauge shows the desired pressure (for 250°F operation, 18 psig, for 270°F operation, 29 psig), turn the pressure control switch knob slowly counter-clockwise until the pilot light goes out. The pressure control will then cycle automatically, maintaining the selected pressure. A preheating time of 10 to 15 minutes is recommended to allow the pressure to stabilize.
6.) The sterilizer is now ready for loading.

NOTE: In the event that water in the jacket runs low, the low water cut-off interrupts the power supply to the heaters. If this occurs, lift the relief handle on the safety valve to release any pressure in the jacket before removing the plug from the filling funnel. Wait until the internal parts cool below the boiling point and refill the jacket with water. Then, press the reset button and proceed with the operating cycle from the beginning.

NOTE: No markings or calibration are on the pressure control switch since temperature is a function of absolute pressure rather than gauge pressure. Depending on altitude and atmospheric conditions, to obtain 250°F temperature may require between 15 and 20 psig pressure and to obtain 270°F temperature may require between 27 and 32 psig pressure. Therefore, the pressure switch must be adjusted to the pressure which will give the desired temperature and the setting will vary according to atmospheric conditions and altitude.

4.2 Low Water Cut-Off Adjustment

The low water cut-off switch may require adjustment if the sterilizer is operating in severe weather conditions. To adjust, hold the plunger stationary while turning the hexagonal adjustment screw clockwise to raise the setting (the screw will move in). Operate the sterilizer through a 270°F cycle, and after it is about ten minutes into the cycle, turn the adjustment screw counter clockwise until the switch trips. Then, turn the screw clockwise about 1/8 turn and reset the switch. This setting may be checked by opening the drain valve and draining the chamber while the heating elements are turned on. The low-water cut-off should actuate by the time that the chamber is drained.

WARNING: Pipe the drain valve to an open container to prevent possible operator injury from steam.

NOTE: If the jacket becomes loaded up with lime and other mineral deposits, the low water cut off will continue to trip during operation. If this occurs, follow maintenance instructions for cleaning the jacket.

4.3 Initial Procedure (Gasoline Heat)

1.) Observe the sight glass and ensure that the water level in the jacket is at the 1/2 water mark or higher.
2.) Ensure that the operating valve is in the off position.
3.) Service and ignite the gasoline burner unit as per the operating instructions on the burner unit and insert it into the firebox of the sterilizer.

CAUTION: Do not completely close these doors when the gasoline burner is in use, but rather keep the doors open at least several inches. The door in the top of the unit must be opened to permit venting of the hot gases from the burner.

WARNING: When gas burner heat is used while the sterilizer is in a confined space, vent the gas exhaust to prevent asphyxiation. Fit two 4" stovepipe flues to the top vent of the sterilizer. Run each flue independently to the outside.

4.) When the jacket pressure is at desired pressure (15 to 18 psig at 250°F and 26 to 29 psig for 270°F), reduce the flame by use of the burner controls to maintain the desired pressure. A preheating time of 10 to 15 minutes is recommended to allow the pressure to stabilize.
5.) The sterilizer is now ready for loading.

NOTE: To prevent an overshoot of temperature when operating the sterilizer at 250°F, a pressure relief valve has been provided. This valve is controlled through a hand valve. To sterilize at 250°F, open the shut-off valve to the pressure relief valve. For 270°F operation, close this hand valve.

4.4 Initial Procedure (Direct Steam)

(1) Open the drain valve.
(2) Open the steam supply valve.
(3) Adjust the pressure regulator to the desired pressure. Turn the handle clockwise to increase the pressure and counter-clockwise to decrease the pressure. A preheating period of 10 to 15 minutes should stabilize the pressure.

NOTE: Operation on direct steam heat requires the installation of the direct steam adaptor kit.

4.5 Operation

(1) Load the sterilizer, leaving enough space between the packs to permit free circulation of steam. Packing too close of fabric loads slows the cycle and may cause sterilization failure.
(2) Close the door and tighten the handwheel securely. The handwheel will not operate until the door locking arms are properly located in the end rings. This is accomplished by rotating the quick throw handle clockwise.
(3) Turn the operating valve to the sterilize position.

(4) The jacket pressure will fall as the chamber fills with steam. Both the jacket and chamber will then build up the desired pressure. Begin the timing of the exposure period when the thermometer in the chamber drain line reads the desired temperature.
(5) At the end of the exposure period, turn the operating valve to fast exhaust for fabric or instrument loads, or slow exhaust for solution loads.

Leave the machine alone until the chamber pressure gauge shows zero pressure.

NOTE: Source of heat should be turned off when operating valve is turned to the slow exhaust position. Heat should remain on when in the fast exhaust position.

(6) If a drying phase is required for the sterilization cycle, (such as in fabric loads), turn the operating valve to dry.
(7) Turn the operating valve to off. Loosen the door locking arms and allow the load to cool for five minutes. Open the door and remove the load.

The sterilizer may be reloaded and a new cycle may be started immediately. If the sterilizer will not be used again, turn off the heat source and turn the operating valve handle to the dry position. This bleeds off pressure and vents the jacket to prevent a vacuum. Keep the sterilizer door closed, but not tightened. This also prevents formation of a vacuum.

5.0 RECOMMENDED EXPOSURE PERIODS

Fabric Loads . . . . . 30 minutes at 250°F
Dry for 15 minutes.
Solution Loads (1000 ml flasks) . . . . . .
30 minutes at 250°F
Slow exhaust to zero pressure
Crack door open for 5 minutes.
Emergency (small instrument load) 3 minutes at 270°F Fast exhaust. When sterilizing solutions, use only thermal shock resistant containers. These containers must have self-venting enclosures. Do not leave the door open or remove the glass containers until the chamber drain thermometer indicates 200°F or lower.

6.0 PREVENTIVE MAINTENANCE

Perform the preventive maintenance to ensure a trouble-free sterilizer. Preventive maintenance also adds to equipment service life by keeping the sterilizer in optimum condition.

If available, use only distilled water. If distilled water is not available, use water as pure as possible. Demineralize and filter the water as required to assure that the water is free of mud, sediment, and minerals.

Use care when filling the sterilizer jacket to prevent water overflow. When filling, vent the air from the jacket by manually actuating the safety valve or by turning the selector valve knob temporarily to sterilize, with the chamber door open. Entry of water into the low-water cut-off switch enclosure can disable this essential protective device. Never clean the sterilizer by hosing it down.

Daily, check the low water cutoff and sight glass for proper function by opening the drain valve and draining the jacket while the heating elements are turned on.

CAUTION: The drain valve should be piped to a container, to prevent injury from live steam.

The low-water cutoff should actuate to turn off the power by the time that the jacket is drained. The water gauge should now show empty.

Daily, check the pressure control switch in following the initial procedure for electric heat.

Daily, manually actuate the relief handle of each safety valve, with the steam pressure in the jacket, to assure that these valves are operable.

Use these preventive maintenance procedures to determine the serviceability of the sterilizer. If the low water cutoff fails to actuate or the water gauge remains full, discontinue use of the sterilizer. Do not use the sterilizer again until a medical equipment repair technician is available to restore it to serviceability. Under emergency conditions, an unserviceable unit may be used, provided that the operator ensures that it contains sufficient water in the jacket at all times.

Daily, remove the chamber drain plug screen and clean any lint and sediment in the strainer.

Daily, wash the interior surface of the shell before heating.

Twice a year, grease the sterilizer door with a high-temperature grease such as Lubriplate 930AA.

7.0 MAINTENANCE PROCEDURES

7.1 General

WARNING -- Before performing any maintenance on the sterilizer,allow all components to cool to room temperature.

CAUTION -- When cleaning the sterilizer,do not use any abrasives. Do not use ammonia or chlorine based cleaners.

Wash the interior surface of the shell with a mixture of 30% Trisodium Phosphate with water. The shelving should be cleaned in the same manner as the shell.

When sterilizing solutions, wash the shell interior as soon as the sterilizer has cooled.

Clean the interior surfaces of the case regularly and keep the interior free of dust and moisture.

Periodically, remove accumulated salts from the jacket interior. A scraper is provided for this purpose. The frequency with which this becomes necessary depends on the hardness of the water used. Too great an accumulation of salts impairs the heating efficiency and could lead to heater element burnout. An indication of the excessive accumulation of salts is the tripping of the low water shutoff valve while water is still in the jacket. When this occurs, remove the heater box cover and disconnect the wiring from the heater. Then, remove the 3/8" hex huts on the heater assembly and remove the assembly and heaters from the jacket. After cleaning the salts from the jacket and heating element, replace and reconnect the heater assembly.

7.2 Operating Valve

The only trouble that can be expected from the operating valve is leaking of the valve seat or the stem packing. This rarely occurs, but may be remedied by replacing the defective parts.

Disassemble the valve by first removing the five body screws. If the carbon seat is worn, it should be replaced. Use care not to damage the seating face of the casting.

When reassembling the valve, ensure that the leg on the stem fork labeled O is inserted in the stepped hole in the carbon disc. The side of the disc with the milled slot part way through is the seating face and should be against the face of the valve body. The valve is off when the stem key way is 45° to the left of the top of the valve as

viewed from the front of the sterilizer.

7.3 Door

Remove the stop from the door post end and the handwheel retaining ring. Then, unscrew the handwheel, exposing the bearing and screw threads. Grease these parts liberally, with a high-temperature grease such as lubriplate 930AA.

To disassemble the door, follow these steps:

1.) Remove the three door post screws on the inside of the door and knock out the door post.
2.) Rotate the hub until the arms are clear of the fulcrums and the entire assembly lifts off.

Assembly of the door is a reversal of the preceding procedure. Ensure that the holes in the hub flange line up with the peg in the door to permit the door to be locked.

The O ring under the door post should be replaced when the door post is refitted. To replace the door gasket, simply lubricate it with soap and water. Lay the gasket in place and push it into the groove wit the fingers of four equal-distant points. Then, carefully work the gasket into the groove until it is evenly distributed around the door. Working from one point results in too much of too little gasket left over at the opposite end.

The hinge pins should be greased at the same time that the door is greased, with the same lubricant. First, loosen the allen screws in the hinge blocks, and drive the pins out with an aluminum or brass drift. Grease the pins and replace. Then, tighten the allen screws.

7.4 Carrying Case

Periodically, lubricate the hinges and latches on the case with a few drops of light motor oil. This ensures good performance.

7.5 Electric Immersion Heaters

Perform the following steps to replace a defective after cutting off power supply to the heaters.

1.) Remove the cover from the heater box and disconnect the wires from the heaters.
2.) Remove the eight 3/8" nuts and washers from the studs and pull the heater plate from the jacket. The gasket should be removed and discarded.
3.) Unscrew the male connections holding the heater to the plate and remove the defective heater.
4.) Slide the connectors over the end of the replacement heater and screw into the heater plate. Use Parker Unipar or equiv-alent to seal all joints.
5.) Remove support from the old heater and position it on the new one.
6.) Slide the new gasket over the heating elements against the plate and insert the heater assembly into the jacket cleanout opening.
7.) Place the electric box over the studs in the jacket cleanout flange and secure it with the eight nuts and washers on the studs and reconnect the wires to the heaters.
8.) Replace the cover on the box.

8.0 PREPARATION FOR SHIPPING OR STORAGE

Wash the interior of the shell surface with a mixture of 30% Trisodium Phosphate in water. DO NOT use an abrasive cleanser. All shelving and exposed interior surfaces of the case should be cleaned in the same manner. Clean the chamber drain plug and remove all lint and sediment from the strainer.

With the sterilizer doors open, turn the operating valve to the sterilize position and open the jacket drain valve. Gently rock the sterilizer from side to side and from end to end to ensure removal of all water from the jacket, chamber, and piping.

Turn the operating valve to the dry position and leave all the valves open.

The sterilizer door should be closed and tightened only enough so that the handles clear the front door of the case when it is closed.

Remove all external piping and wiring.

Release fuel tank air pressure and burner assembly. Drain the fuel tank into a suitable container.

WARNING: Allow the unit to cool before draining the fuel tank. Do not smoke and ensure that no open flame is nearby.

Close the top door and both sides. Latch into place.

Unscrew the two T bars holding the rear door to the case. Raise the back of the unit up to permit swinging the door into its closed position. Latch the door in place. Release the T bars on the front of the door and swing up into closed position and latch in place.

9.0 TROUBLESHOOTING CHART

FAULT	PROBABLE CAUSE	REMEDY
Pilot light does not light upon electrical operation.	1. No power to unit.	1. Check power line and fuses.
	2. Defective power switch.	2. Replace power switch.
	3. Lamp burned out.	3. Replace lamp.
	4. Loose electrical connections.	4. Check wiring for loose connections or broken wire.
	5. Low water cut out tripped.	5. Fill with water and reset.
No steam pressure. Electric operation.	1. Defective pressure control.	1. Repair or replace control.
	2. Contactor coil.	2. Replace contactor coil.
Steam pressure high, low, or erratic. Electric heat operation.	1. Pressure control sticking or defective.	1. Repair or replace pressure control.
	2. Pressure gauge error.	2. Calibrate or replace pressure gauge.
	3. Loose electrical connection.	3. Check wiring for broken wire or loose connection.
Excessive time to generate steam. Electric heat operation.	1. Low voltage	1. Check and adjust.
	2. Defective heating element	2. Replace heating element.
	3. Loose electrical connection to heaters.	3. Check wiring to heaters.
	4. Mineral deposits in jacket.	4. Clean jacket and heating elements.
Chamber does not come up to operating temperature or pressure.	1. Operating valve handle is incorrectly positioned.	1. Turn the handle to the proper position.
	2. Steam trap is stuck open.	2. Overhaul the steam trap.
	3. Screen in the chamber drain is plugged.	3. Clean the screen.
	4. Door leaks.	4. Tighten door or replace door gasket.
	5. Defective thermometer.	5. Replace thermometer.
	6. Pressure gauge error.	6. Calibrate or replace gauge.
	7. Pressure control or pressure regulator set too low.	7. Correct the setting.

FAULT	PROBABLE CAUSE	REMEDY
Low water cut-out trips with water in the jacket. Electric Heat.	1. Mineral deposits in the jacket.	1. Clean jacket and heating elements.
	2. Low water cut-off needs adjustment.	2. Adjust the low water cut-out.
Water in chamber.	1. Plugged screen in chamber drain.	1. Remove screen and clean.
	2. Plugged drain line.	2. Clean drain line.
	3. Steam trap does not open for water.	3. Overhaul steam trap.
Steam comes out vacuum dryer.	1. Vacuum dryer clogged and inoperative.	1. Overhaul vacuum dryer.
	2. Vacuum dryer not in a vertical position.	2. Straighten the vacuum dryer.
Load does not dry.	1. Vacuum dryer clogged.	1. Overhaul vacuum dryer.
	2. Operating valve handle does not properly positioned.	2. Turn to proper position.
	3. Heat source shut off during drying cycle.	3. Continue jacket pressure throughout cycle.
	4. Vacuum dry time insufficient.	4. Time for full 15 minutes.
	5. Goods improperly loaded.	5. Arrange load so moisture will drain off.
Solution exhaust too fast or too slow.	1. Operating valve handle not properly positioned.	1. Turn to proper position.
	2. Multiport valve plugged or defective.	2. Clean or repair multiport valve.
Safety valve pops prematurely or does not release at the set pressure.	1. Defective safety valve.	1. Replace safety valve.
Case overheats. Gasoline burner operation.	1. Insufficient venting.	1. Check stack for obstruction and for proper draft.
	2. Firebox door closed.	2. Open door.
	3. Wing baffle improperly positioned.	3. Position the wing baffle properly.
No steam pressure. Direct steam operation.	1. Steam valve closed.	1. Open steam supply valve.

FAULT	PROBABLE CAUSE	REMEDY
	2. Faulty steam control valve.	2. Repair.
	3. No steam supply to unit.	3. Supply steam to unit.
Steam pressure high, low, or erratic. Direct steam operation.	1. Steam supply less than 35 psi minimum.	1. Increase steam supply pressure.
	2. Steam pressure regulator sticking or defective.	2. Repair or replace steam pressure regulator.
	3. Steam trap clogged or stuck open.	3. Overhaul steam trap.
	4. Pressure gauge error.	4. Calibrate or replace pressure gauges.
	5. Drain valve closed.	5. Open drain valve.

10.0 REPAIR PARTS

Repair parts furnished with each unit:

Part Number	Description	Source	Units Per Assembly
B300-264-23/2	Door Gasket	ETC	1
C300-249-46/109	Heating Element Mounting Plate Gasket	ETC	2
C300-249-48/109	Heating Element	ETC	3
C300-250-50/109	Sleeve	ETC	6
C300-906-40	Washer, Teflon, Filler Plug	ETC	2

As an option, the burner accessory can be furnished with each unit. This accessory carries the following spare parts:

Part Number	Description	Source	Units Per Assembly
N/A	Inflating Pump	ETC	1
N/A	Burner	ETC	1

NOTE: For instructions on operation, maintenance, and parts of the gasoline burner unit, refer to Technical Manual TM 10-7360-204-13.

11.0 ILLUSTRATED PARTS BREAKDOWN

The following pages provide drawings and parts listing for the M-138 sterilizer.

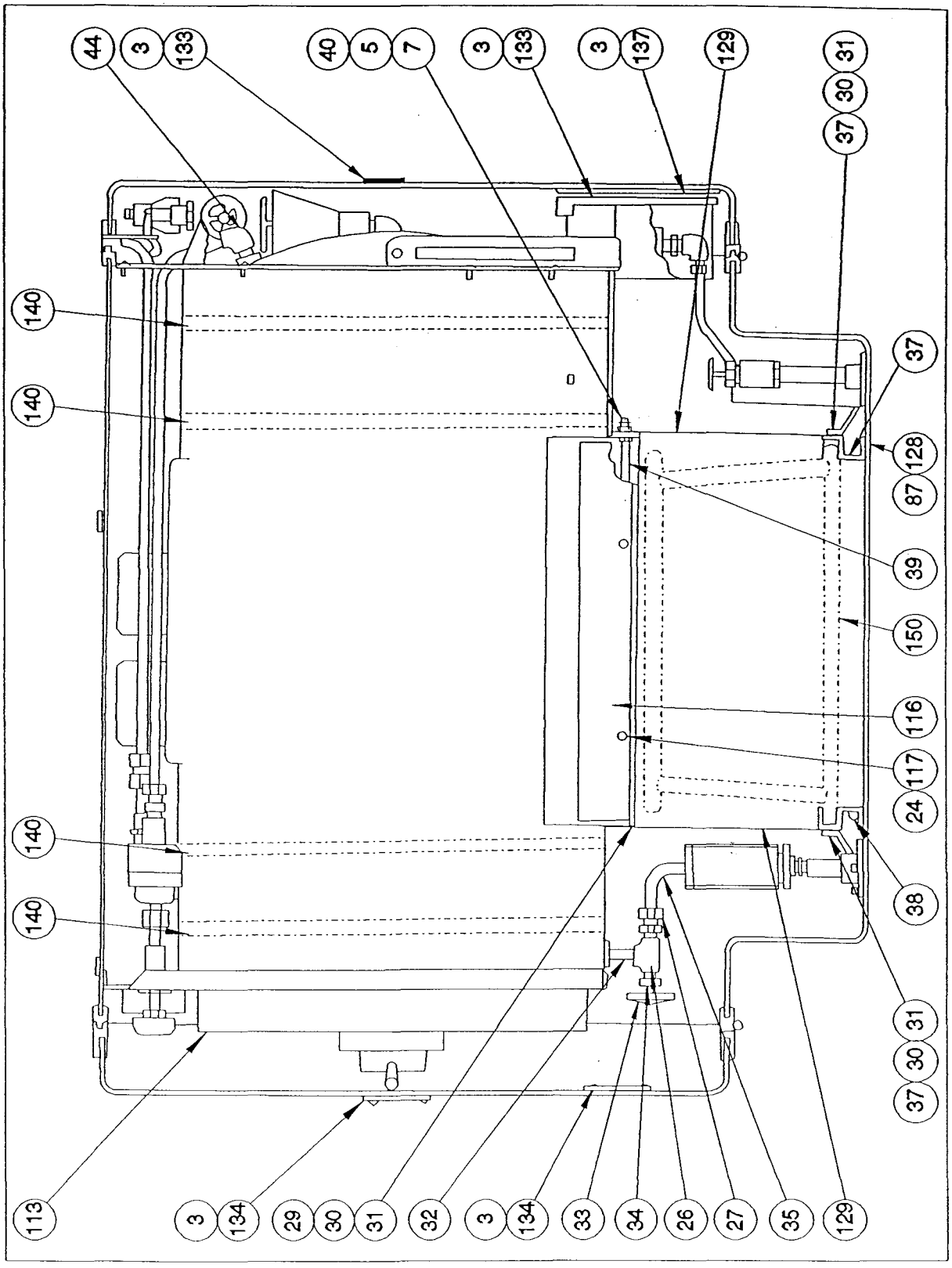

Figure 1. M-138 Sterilizer, Partial Side View

PARTS LIST, FIGURE 1

Ref Nº	Source	Part Nº	Description	Quantity
1-3	ETC	C300-906-12	Screw, Drive	45
1-5	ETC	C300-906-6	Washer	6
1-7	ETC	C300-906-8	Washer, 3/8 Lock	12
1-24	ETC	C300-906-80	Nut, Hex Nº 10-32	18
1-26	ETC	C300-906-20	Tee, 3/8"	3
1-27	ETC	C300-906-53	Connector, Male 1/2 ODT x 3/8 IPT	3
1-29	ETC	C300-906-101	Screw, Round Head, Nº 8-32 x 3/8" Lg.	16
1-30	ETC	C300-906-102	Nut, Hex Nº 8-32	16
1-31	ETC	C300-906-103	Washer, Lock Nº 8	16
1-32	ETC	C300-906-17	Nipple, 3/8 x 1-7/8	1
1-33	ETC	C300-906-18	Thermometer, 500-300° F	1
1-34	ETC	C300-906-19	Bushing, 3/8 x 1/4 IPT	1
1-35	ETC	A300-224-33/98	Tube, Chamber Drain	1
1-37	ETC	C300-906-104	Screw, Flat Head, Nº 8-32 x 1/2"	6
1-38	ETC	C300-906-106	Slide, Channel	2
1-39	ETC	C300-906-21	Rod	2
1-40	ETC	C300-906-23	Nut, Lock Hex 3/8-16	13
1-44	ETC	C300-906-24	Elbow, Male 1/2 ODT x 3/8 IPT	1
1-87	ETC	C300-906-99	Screw, Flat Head 1/2-20 x 1	34
1-113	ETC	C300-906-1	Chamber Assembly	1
1-116	ETC	C300-906-82	Baffle, Wing	2
1-117	ETC	C300-906-84	Stop	4
1-128	ETC	C300-906-100	Washer, Countersunk	30
1-129	ETC	C300-906-105	Fire Box Side	2
1-133	ETC	C300-906-139	Instruction Plate - Shipping	2
1-134	ETC	C300-906-130	Instruction Plate - Set-Up	1
1-137	ETC	C300-906-107	Wiring Diagram Plate	1
1-140	ETC	C300-906-152	Banding Strip	4

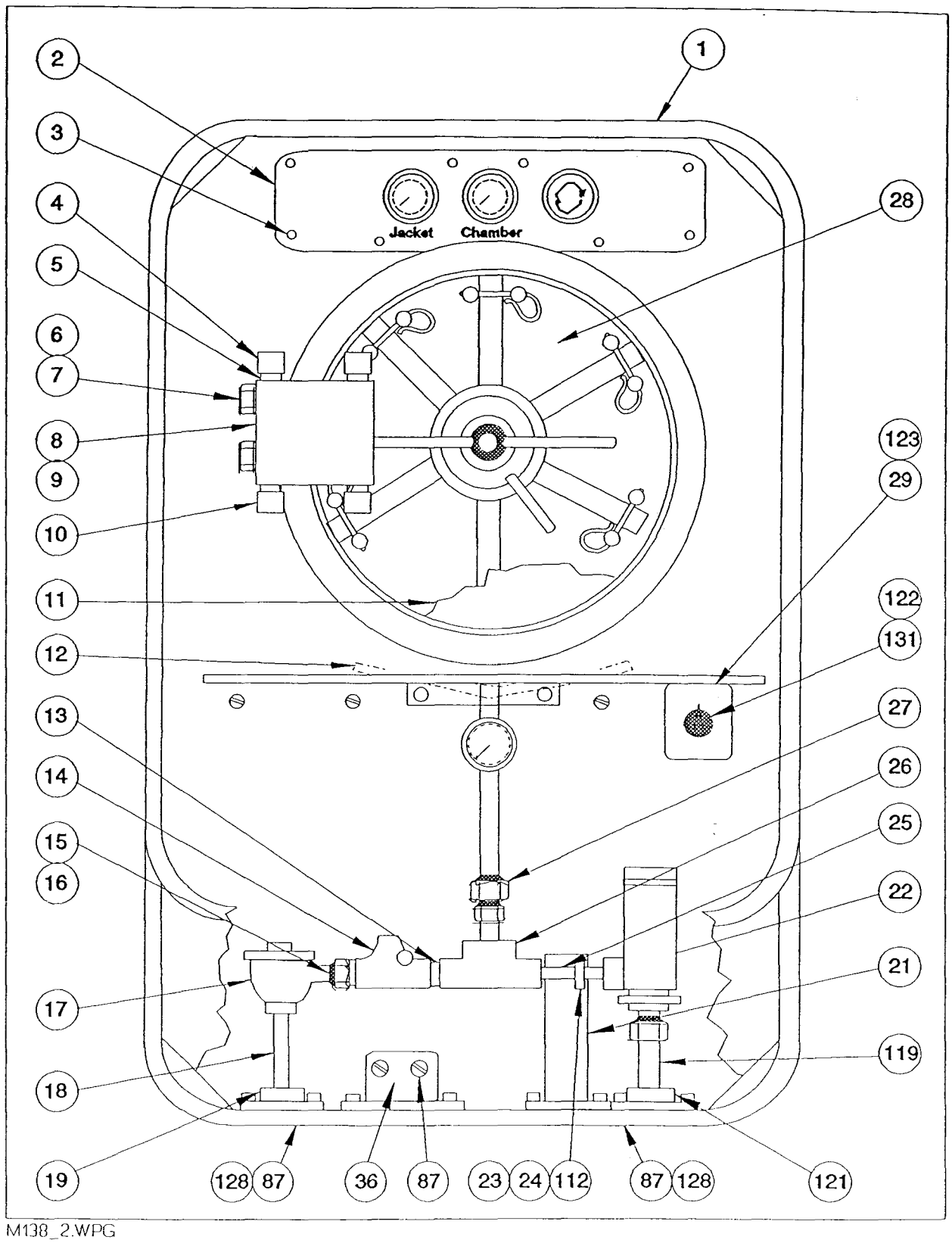

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Figure 2. M-138 Sterilizer, Front View

PARTS LIST, FIGURE 2

Ref Nº	Source	Part Nº	Description	Quantity
2-1	ETC	C300-906-96	Frame	1
2-2	ETC	C300-906-11	Name Plate	1
2-3	ETC	C300-906-12	Screw, Drive	45
2-4	ETC	C300-906-5	Hinge, Frame	1
2-5	ETC	C300-906-6	Washer	6
2-6	ETC	C300-906-9	Screw, Hex Head, 3/8-16 x 1" Long	2
2-7	ETC	C300-906-8	Washer, 3/8 Lock	12
2-8	ETC	C300-906-3	Leaf, Hinge	1
2-9	ETC	C300-906-4	Pin, Hinge	2
2-10	ETC	C300-906-7	Screw, Socket Set, 1/4-20 x 1/4" Long	2
2-11	ETC	C300-906-10	Screen	1
2-12	ETC	C300-906-71	Baffle Assembly, Flame	1
2-13	ETC	C300-906-57	Nipple, 3/8 x CL.	2
2-14	ETC	A300-224-8/98	Valve, Swing Check 3/8"	1
2-15	ETC	C300-906-47	Nut, Union, 3/8"	2
2-16	ETC	C300-906-48	Spud, Male, 3/8"	2
2-17	ETC	A300-224-1/98	Trap, Chamber, 3/8"	1
2-18	ETC	A300-224-2/98	Nipple, 3/8" x 3-3/4" Long	2
2-19	ETC	A300-224-3/98	Coupling Assembly	2
2-20	ETC	C300-906-48	Screw, Round Head, 1/4 - 20 x 3/4"	12
2-21	ETC	A300-224-12/98	Pipe Support Assembly	2
2-22	ETC	A300-224-17/98	Dryer, Vacuum, 3/8"	1
2-23	ETC	A300-224-15/98	U-Bolt	2
2-24	ETC	C300-906-80	Nut, Hex Nº10-32	18
2-25	ETC	A300-224-34/98	Nipple, 3/8" x 3" Long	1
2-26	ETC	C300-906-20	Tee, 3/8"	3
2-27	ETC	C300-906-53	Connector, Male, 1/2" ODT x 3/8" IPT	3
2-28	ETC	C300-906-2	Door Assembly	1
2-29	ETC	C300-906-101	Screw, Round Head Nº8-32 x 3/8" Long	10
2-36	ETC	C300-906-127	Brace	2
2-87	ETC	C300-906-99	Screw, Flat Head, 1/4-20 x 1"	6
2-112	ETC	C300-906-81	Washer, Lock, Nº10	6
2-119	ETC	A300-224-37/98	Nipple, Special	1
2-121	ETC	A300-224-36/98	Coupling Assembly	1
2-122	ETC	C300-906-125	Timer	1
2-123	ETC	C300-906-124	Bracket Timer	1
2-128	ETC	C300-906-100	Washer, Countersunk	30
2-131	ETC	C300-906-126	Timer Knob	1

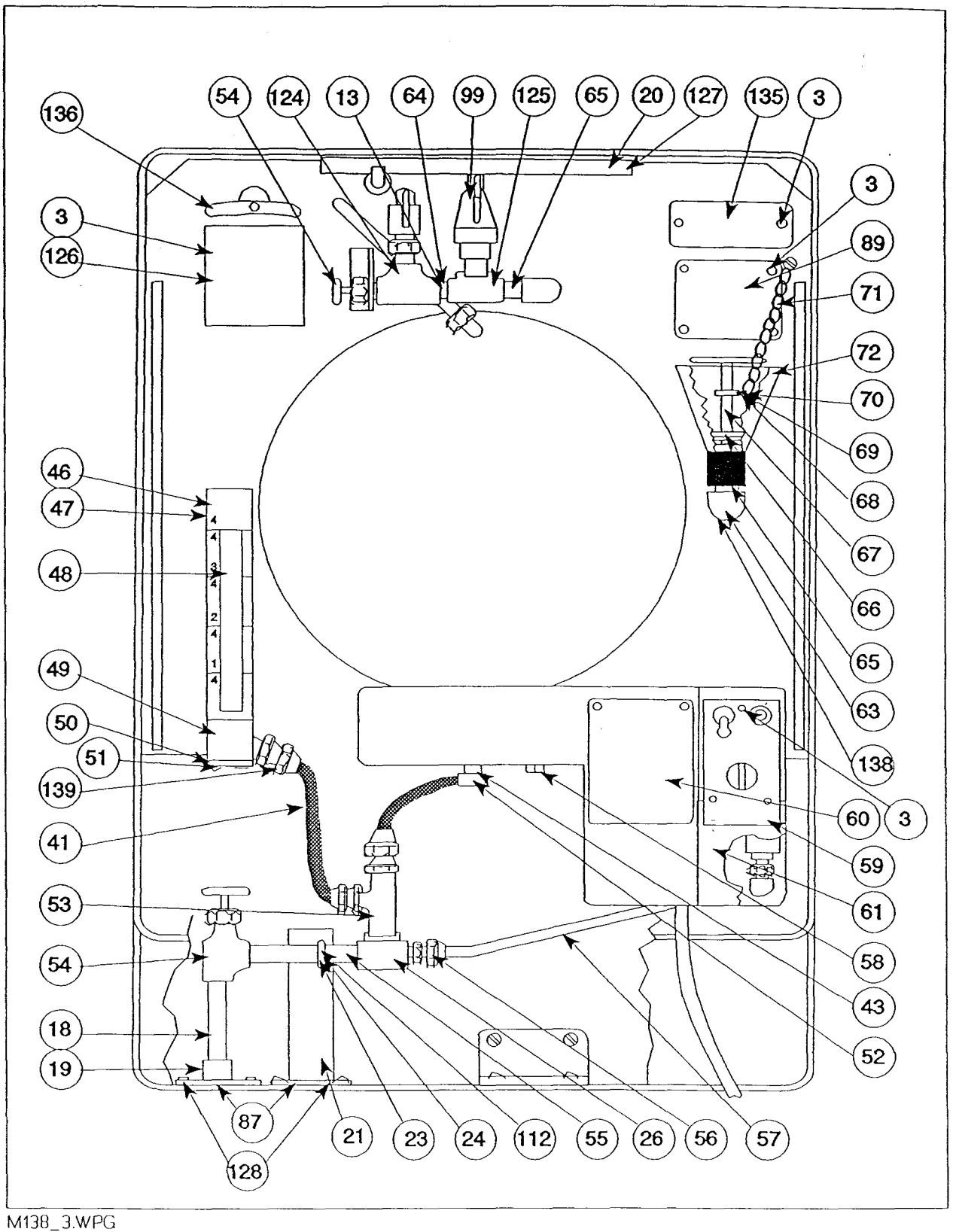

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Figure 3. M-138 Sterilizer, Rear View

PARTS LIST, FIGURE 3

Ref Nº	Source	Part Nº	Description	Quantity
3-3	ETC	C300-906-12	Screw, Drive	45
3-13	ETC	C300-906-57	Nipple, 3/8" x CL	2
3-18	ETC	A300-224-2/98	Nipple, 3/8" x 3-3/4" Long	2
3-19	ETC	A300-224-3/98	Coupling Assembly	2
3-20	ETC	C300-906-113	Screw, Round Head, 1/4 - 20 x 3/4"	12
3-21	ETC	A300-224-12/98	Pipe Support Assembly	2
3-23	ETC	A300-224-15/98	U-Bolt	2
3-24	ETC	C300-906-80	Nut, Hex Nº10-32	18
3-26	ETC	C300-906-20	Tee, 3/8"	3
3-41	ETC	C300-906-164	Hose	2
3-43	ETC	C300-906-165	Nipple, 3/8" IPT	1
3-46	ETC	C300-906-26	Disc, End	2
3-47	ETC	C300-906-27	Ring, Seal	3
3-48	ETC	C300-906-28	Glass, Water Gauge	1
3-49	ETC	C300-906-29	Block, Gauge	1
3-50	ETC	C300-906-30	Screw, Hex Head, 5/16-18 x 2-1/2"	2
3-51	ETC	C300-906-31	Washer, 5/16" Lock	3
3-52	ETC	C300-906-154	Elbow, Female 1/2" ODT x 3/8" IPT	1
3-53	ETC	C300-906-153	Tee, Male Run 1/2" ODT x 3/8" IPT	1
3-54	ETC	C300-906-61	Valve, 3/8"	2
3-55	ETC	A300-197-13/108	Nipple, 3/8" x 4-1/2" Long	1
3-56	ETC	C300-906-66	Connector, Male, 3/8" ODT x 3/8" IPT	2
3-57	ETC	A300-197-12/108	Tube, Pressure Control	1
3-58	ETC	C300-906-22	Plug, Pipe, 3/8"	2
3-59	ETC	C300-906-111	Plate, Name	1
3-60	ETC	C300-906-112	Plate, Instruction	1
3-61	ETC	C300-906-109	Electrical Control Box Assembly	1
3-63	ETC	C300-906-35	Elbow, 1/2" IPT	2
3-64	ETC	C300-906-36	Bushing, 1/2" x 3/8 IPT	1
3-65	ETC	C300-906-37	Bushing, Nipple, 1/2" x CL	2
3-66	ETC	C300-906-40	Washer	1
3-67	ETC	C300-906-45	Plug Assembly	1
3-68	ETC	C300-906-41	Clip	1
3-69	ETC	C300-906-42	Screw, 4-40 x 3/8"	1
3-70	ETC	C300-906-43	Nut, Hex, Nº4-40	1
3-71	ETC	C300-906-44	Chain	1
3-72	ETC	C300-906-38	Funnel Assembly	1
3-87	ETC	C300-906-99	Screw, Flat Head, 1/2-20 x 1"	34
3-89	ETC	C300-906-134	Warning Plate	1
3-99	ETC	C300-906-58	Valve, Safety, 1/2-36	1

Ref Nº	Source	Part Nº	Description	Quantity
3-112	ETC	C300-906-81	Washer, Lock, Nº10	6
3-124	ETC	C300-906-60	Relief Valve 3/8 - 20 psi	1
3-125	ETC	C300-906-85	Tee, 1/2"	1
3-126	ETC	C300-906-136	Identification Plate	1
3-127	ETC	C300-906-114	Washer, Lock 1/4	10
3-128	ETC	C300-906-100	Washer, Countersunk	30
3-135	ETC	C300-906-135	Electrical Data Plate	1
3-136	ETC	C300-906-139	Scraper Assembly	1
3-138	ETC	C300-906-39	Nipple, 1/2" x 1-1/2"	2
3-139	ETC	C300-906-155	Elbow, Male, 45°, 1/2" ODT x 1/4" IPT	1

PARTS LIST, FIGURE 4

Ref Nº	Source	Part Nº	Description	Quantity
4-86	ETC	C300-906-62	Leg	2
4-88	ETC	C300-906-78	Post	8
4-94	ETC	C300-906-86	Insulation	1
4-95	ETC	C300-906-77	Stack Assembly	1
4-96	ETC	C300-906-87	Insulation	2
4-97	ETC	C300-906-79	Screw, Round Head, 6-32 x 1/4"	8
4-98	ETC	C300-906-88	Insulation	2
4-100	ETC	C300-906-70	Channel	2
4-101	ETC	C300-906-73	Flue Gas Deflector	1
4-102	ETC	C300-906-75	Insulation	1
4-103	ETC	C300-906-76	Wire Mesh	1
4-104	ETC	C300-906-72	Screw, Pan Head, #8 x 3/8, Sheet Metal	75
4-105	ETC	C300-906-119	Shelf, Bottom	1
4-106	ETC	C300-906-123	Shelf	6
4-107	ETC	C300-906-149	Insulation	1
4-108	ETC	C300-906-117	Screw, Hex Head, 3/8-16 x 3/4"	3
4-109	ETC	C300-906-118	Washer, 1/16" Thick	11
4-110	ETC	C300-906-150	Cover, Insulation	1
4-111	ETC	C300-906-116	Baffle	1
4-115	ETC	C300-906-89	Insulation	4
4-118	ETC	C300-906-74	Washer	22
4-141	ETC	C300-906-120	Bolt, 1/4-28 x 5/8 Lg., Hex Head	2
4-142	ETC	C300-906-121	Washer, .265 ID x .5 OD x 1/32 Thick	2
4-143	ETC	C300-906-59	Nut Plate, 1/4-28 Thread Stl. St.	2

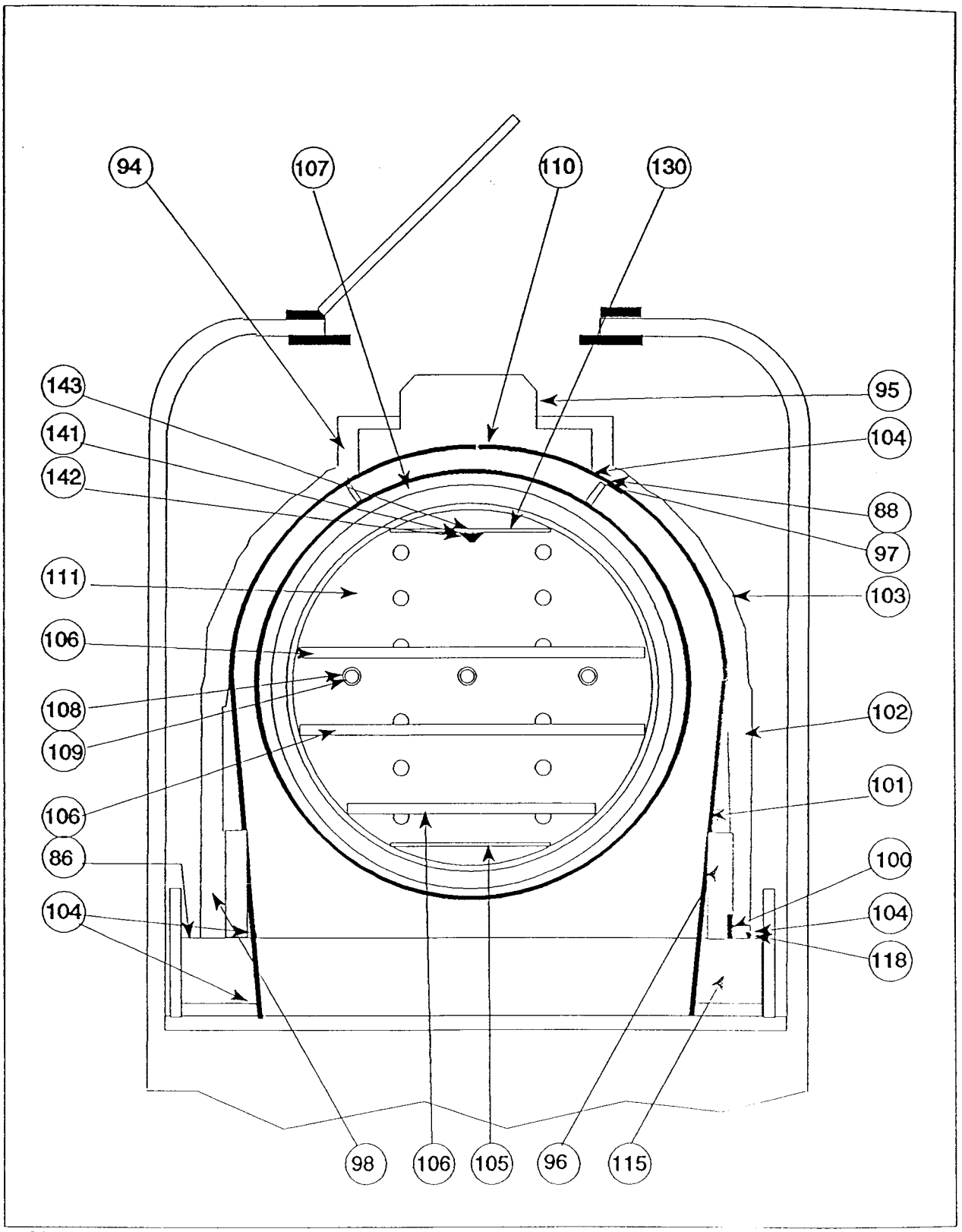

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Figure 4. Chamber Interior

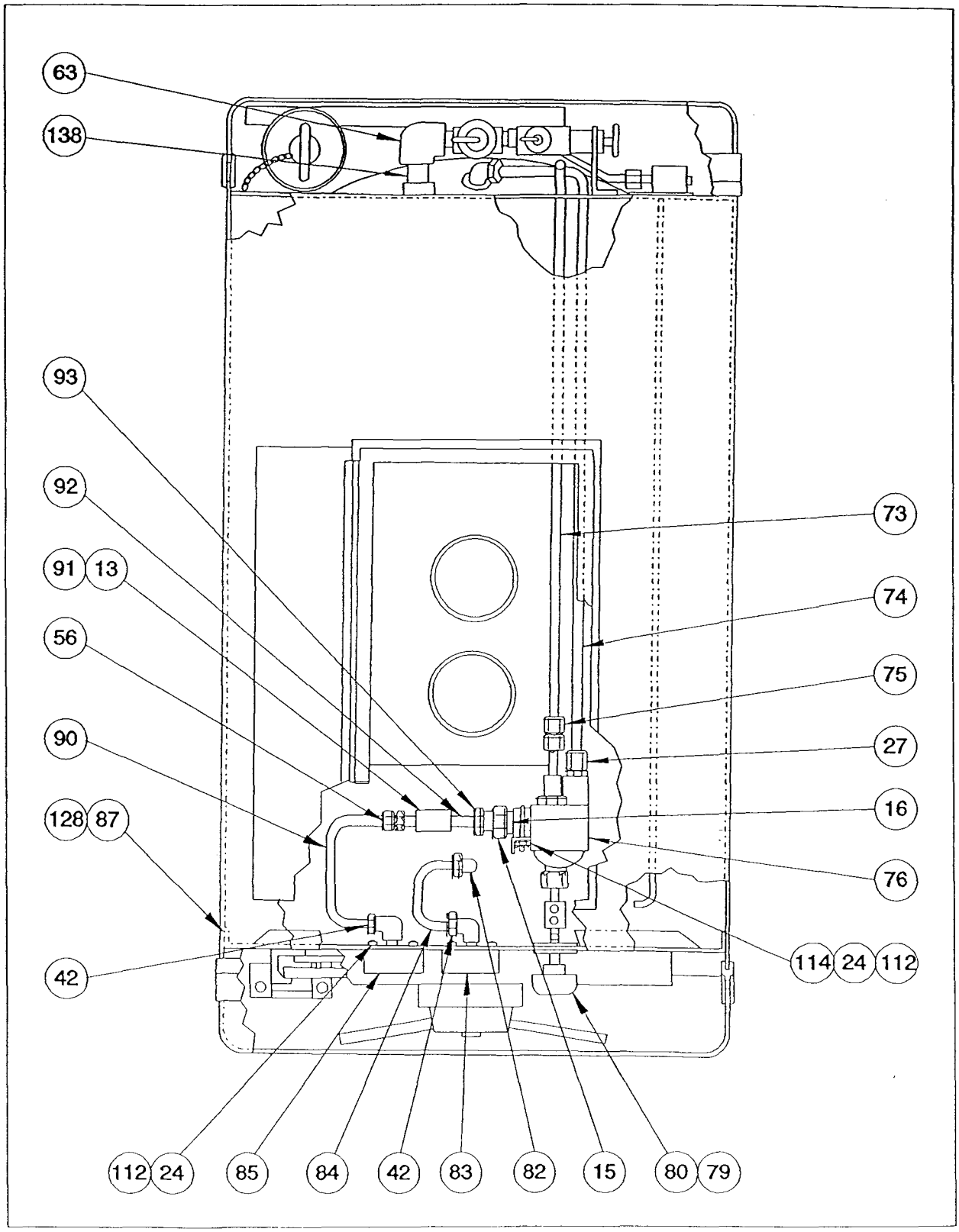

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Figure 5. M-138 Sterilizer, Top View

PARTS LIST, FIGURE 5

Ref Nº	Source	Part Nº	Description	Quantity
5-13	ETC	C300-906-57	Nipple, 3/8" x CL	2
5-15	ETC	C300-906-47	Nut, Union, 3/8"	2
5-16	ETC	C300-906-48	Spud, Male, 3/8"	2
5-24	ETC	C300-906-80	Nut, Hex Nº10-32	18
5-27	ETC	C300-906-53	Connector, Male, 1/2" ODT x 3/8" IPT	3
5-42	ETC	C300-906-46	Elbow, Female 3/8" ODT x 1/4" IPT	2
5-56	ETC	C300-906-66	Connector, Male, 3/8" ODT x 3/8"	2
5-63	ETC	C300-906-35	IPT	2
5-73	ETC	C300-906-56	Elbow, 1/2" IPT	1
5-74	ETC	C300-906-55	Tube, Vent Tube, Chamber Steam	1
5-75	ETC	C300-906-54	Connector, Female, 1/2" ODT x 1/4"	1
5-76	ETC	C300-906-52	IPT	1
5-79	ETC	C300-906-2/13	Valve, Multiport Assembly	1
5-80	ETC	C300-906-13	Screw, Machine 8-32 UNF x 1/2" RH	1
5-82	ETC	C300-906-67	Wheel, Hand Elbow, Male, 3/8" ODT x 1/4" IPT	1
5-83	ETC	C300-906-15	Gauge, Compound	1
5-84	ETC	C300-906-69	Tube, Chamber Pressure	1
5-85	ETC	C300-906-16	Gauge, Pressure	1
5-87	ETC	C300-906-99	Screw, Flat Head, 1/2 - 20 x 1"	1
5-90	ETC	C300-906-68	Tube, Jacket Pressure	
5-91	ETC	C300-906-65	Tee, 3/8"	1
5-92	ETC	C300-906-64	Nipple, 3/8" x 1-5/8"	1
5-93	ETC	C300-906-63	End, Threaded, 3/8	1
5-112	ETC	C300-906-81	Washer, Lock, Nº10	6
5-114	ETC	C300-906-82	U-Bolt	1
5-128	ETC	C300-906-100	Washer, Countersunk	30
5-138	ETC	C300-906-39	Nipple, 1/2" x 1-1/2"	2

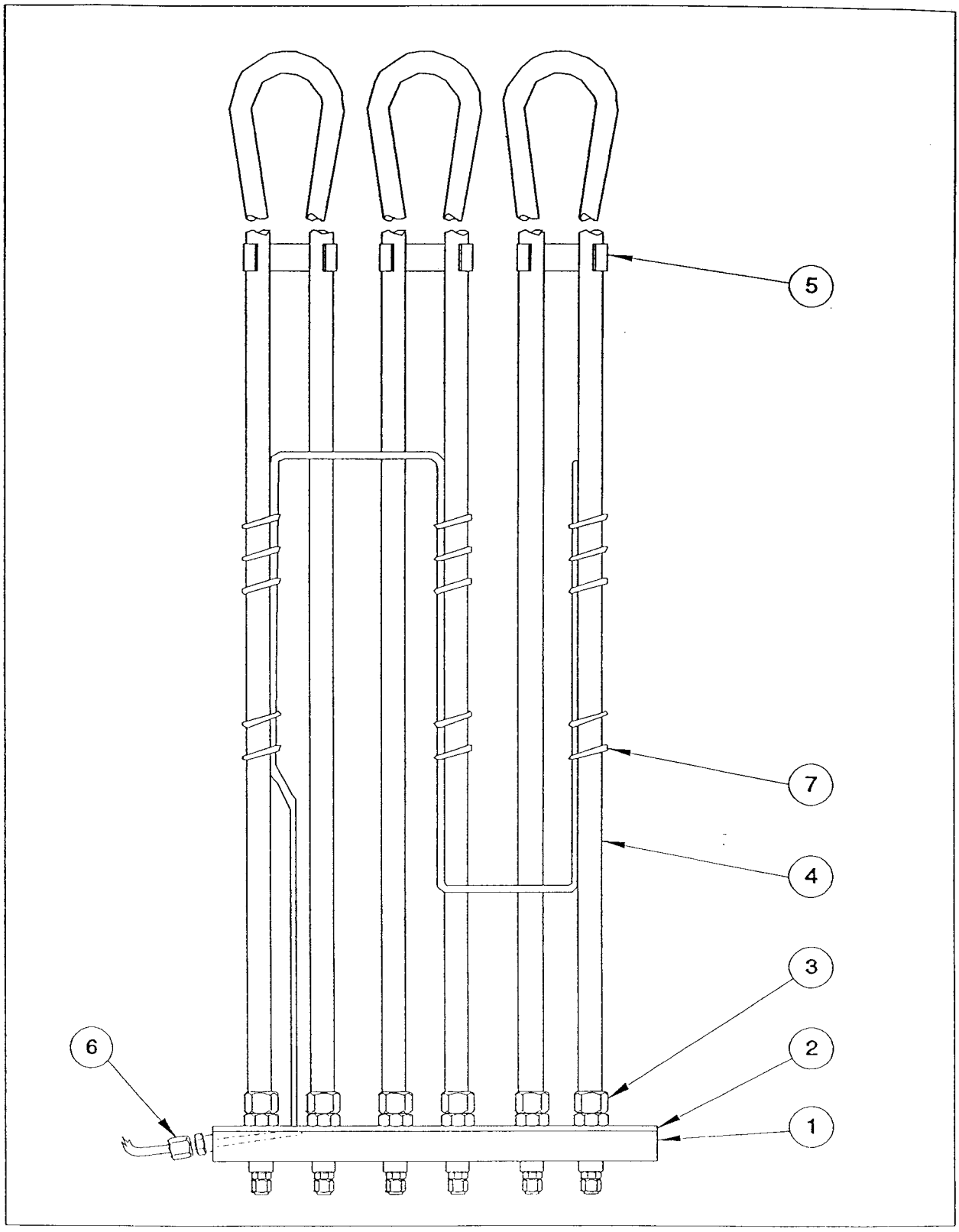

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Figure 6. Heating Element

PARTS LIST, FIGURE 6

Ref Nº	Source	Part Nº	Description	Quantity
6-	ETC	B300-265-28/109	Heater Assembly, Complete	Ref.
6-1	ETC	C300-249-45/109	Plate	1
6-2	ETC	C300-249-46/109	Gasket	1
6-3	ETC	C300-249-47/109	Male Connector	6
6-4	ETC	C300-249-48/109	Heating Element with Sleeves (C300-250-50/109)	3
6-5	ETC	C300-249-49/109	Support	3
6-6	ETC	C300-249-37/109	Fitting	1
6-7	ETC	C300-249-32/109	Spring	3

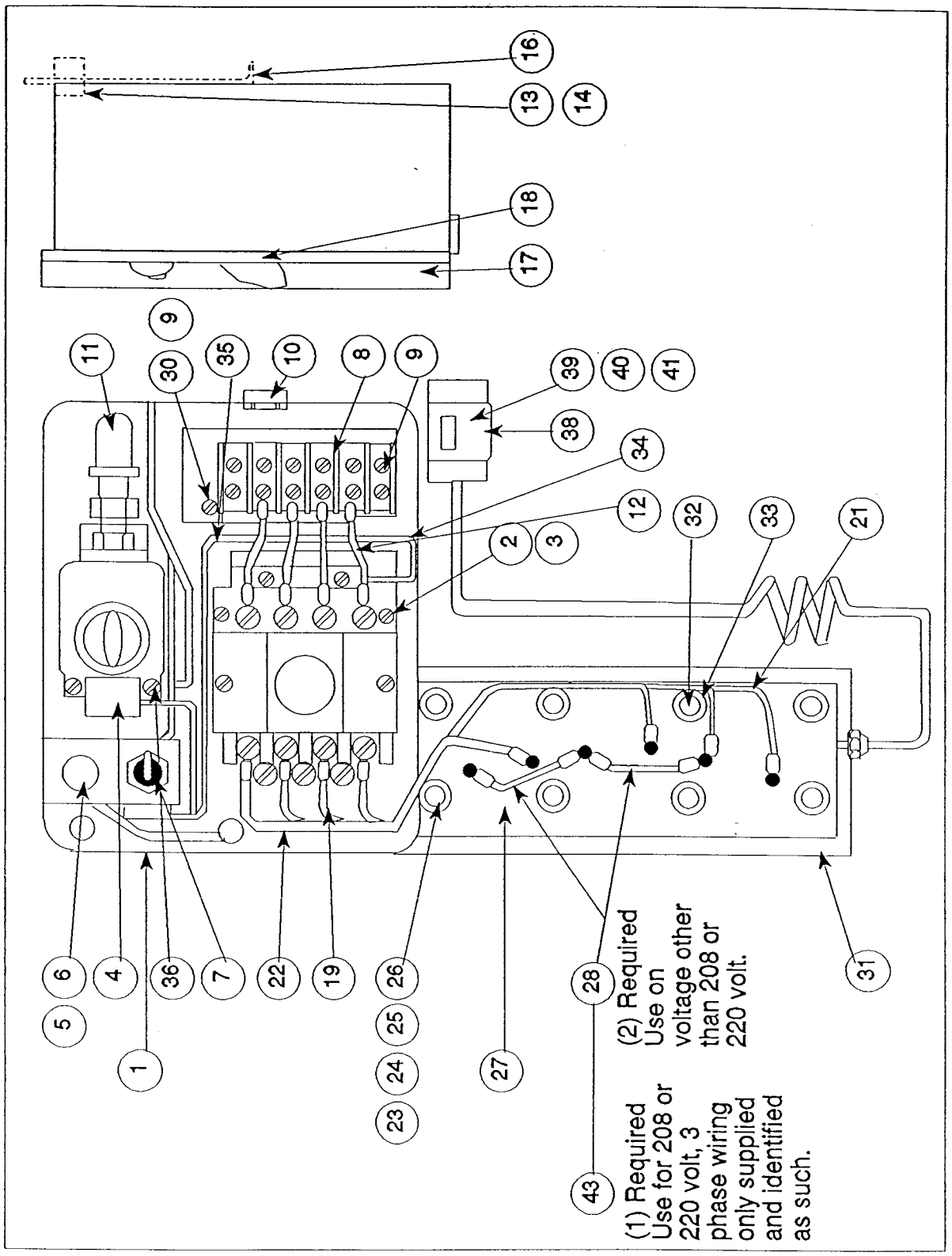

Figure 7. Control Box Assembly.

PARTS LIST, FIGURE 7

Ref Nº	Source	Part Nº	Description	Quantity
7-	ETC	C300-906-109	Control Box Assembly	Ref.
7-1	ETC	B300-265-1/109	Box Assembly	1
7-2	ETC	B300-265-2/109	Contactor	1
7-3	ETC	B300-265-3/109	Screw, Round Hd Nº 8 x 3/8 Type A	3
7-4	ETC	B300-265-4/109	Pressure Control	1
7-5	ETC	B300-265-5/109	Pilot Light, Red	1
7-6	ETC	B300-265-6/109	Lamp, Neon	1
7-7	ETC	B300-265-7/109	Switch, Toggle	1
7-8	ETC	B300-265-8/109	Block Terminal	1
7-9	ETC	B300-265-9/109	Screw 10-32 x 3/4 Type 'F'	5
7-10	ETC	B300-265-10/109	Bushing, Insulating 1/2" Male	1
7-11	ETC	B300-265-46	Elbow, Female 3/8 ODT x 1/4 IPT	1
7-12	ETC	B300-265-12/109	Wire Assembly 3 3/4" Long	4
7-13	ETC	B300-265-4/2	Screw, Hex Head 1/4-20 x 5/8	2
7-14	ETC	B300-265-14/109	Washer	2
7-15	ETC	-	-	-
7-16	ETC	B300-265-16/109	Shield	1
7-17	ETC	B300-265-18/109	Cover	1
7-18	ETC	B300-265-19/109	Screw, Round Head Nº 6 x 3/8	4
7-19	ETC	B300-265-20/109	Wire Assembly 9" Long	1
7-20	ETC	-	-	-
7-21	ETC	B300-265-22/109	Wire Assembly 12" Long	3
7-22	ETC	B300-265-23/109	Wire Assembly 8" Long	2
7-23	ETC	B300-265-24/109	Stud 3/8-16	8
7-24	ETC	C300-960-118	Washer 3/8 Dia Nominal	8
7-25	ETC	C300-960-8	Washer, Lock 3/8 Dia Nominal	8
7-26	ETC	C300-960-23	Nut, Hex Lock 3/8-16	8
7-27	ETC	B300-265-28/109	Heater Assembly	1
7-28	ETC	B300-265-29/109	Wire Assembly 3" Long	2
7-29	ETC	-	-	-
7-30	ETC	B300-265-133	Terminal Ground	1
7-31	ETC	B300-265-34/109	Cover, Heater	1
7-32	ETC	B300-265-35/109	Screw, Round Hd 6-32 x 3/8	2
7-33	ETC	B300-265-36/109	Spacer 3/16 Thick	2
7-34	ETC	B300-265-38/109	Wire Assembly	1
7-35	ETC	B300-265-39/109	Wire Assembly	1
7-36	ETC	B300-265-41/109	Wire Assembly	1
7-37	ETC	-	-	-
7-38	ETC	B300-265-30/109	Low Water Cutoff	1
7-39	ETC	B300-265-156	Screw, Machine Head 10-32 x 1/2	2

Ref Nº	Source	Part Nº	Description	Quantity
7-40	ETC	B300-265-157	Nut, Elastic Lock 10-32	2
7-41	ETC	B300-265-166	Washer, Flat	2
7-43	ETC	B300-265-13/109	Wire 6 1/2" Long	1

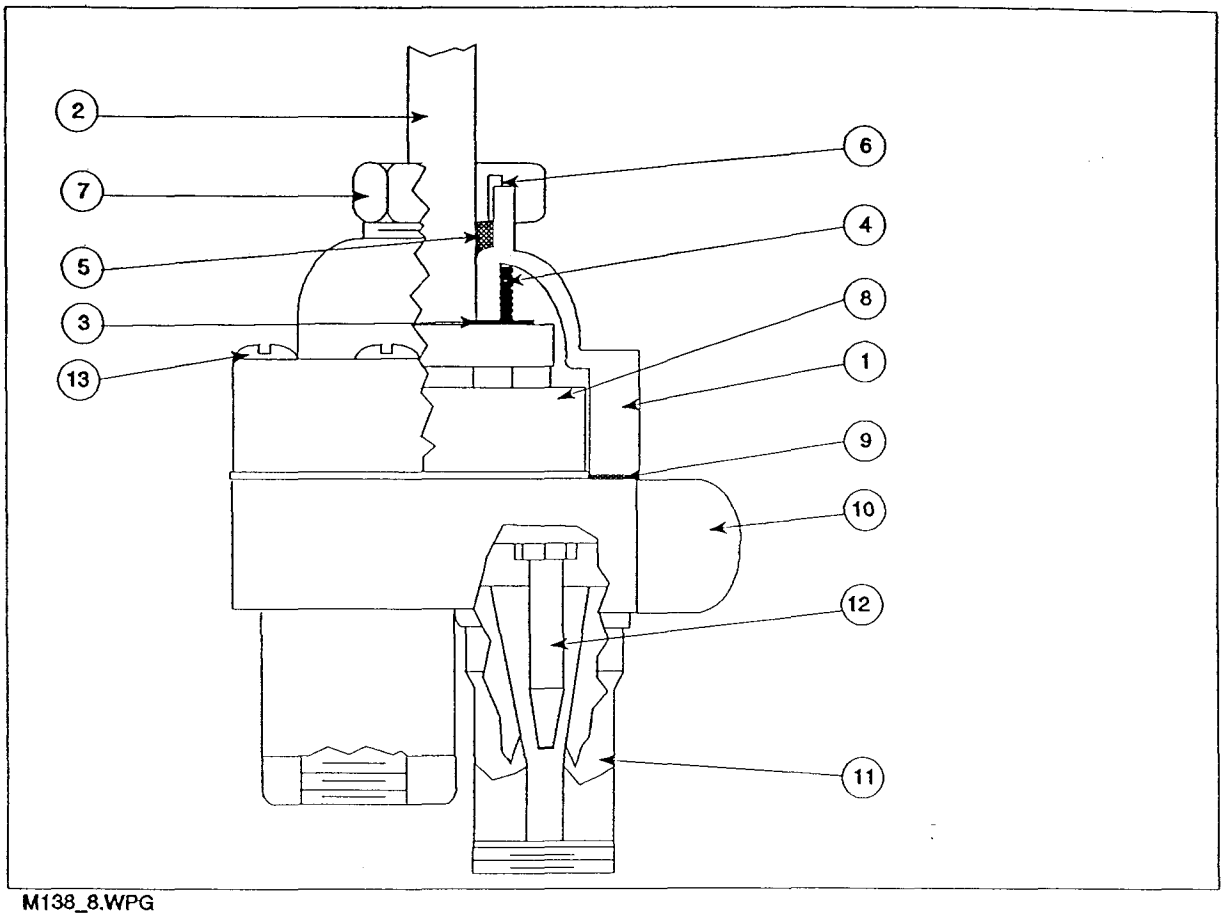

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Figure 8. Multiport Valve Assembly.

PARTS LIST, FIGURE 8

Ref Nº	Source	Part Nº	Description	Quantity
8-	ETC	C300-906-52	Multiport Valve Assembly	Ref
8-1	ETC	B300-210-1/52	Bonnet	1
8-2	ETC	B300-210-2/52	Stem	1
8-3	ETC	B300-210-3/52	Washer	1
8-4	ETC	B300-210-4/52	Spring	1
8-5	ETC	B300-210-5/52	Packing	1
8-6	ETC	B300-210-6/52	Gland	1
8-7	ETC	B300-210-7/52	Nut, Packing	1
8-8	ETC	B300-210-8/52	Seat, Valve	1
8-9	ETC	B300-210-9/52	Gasket	1
8-10	ETC	B300-210-10/52	Body, Valve	1
8-11	ETC	B300-210-11/52	Nozzle	1
8-12	ETC	B300-210-12/52	Tube, Ejector	1
8-13	ETC	B300-210-13/52	Screw, Round Head 10-32 x 1	5

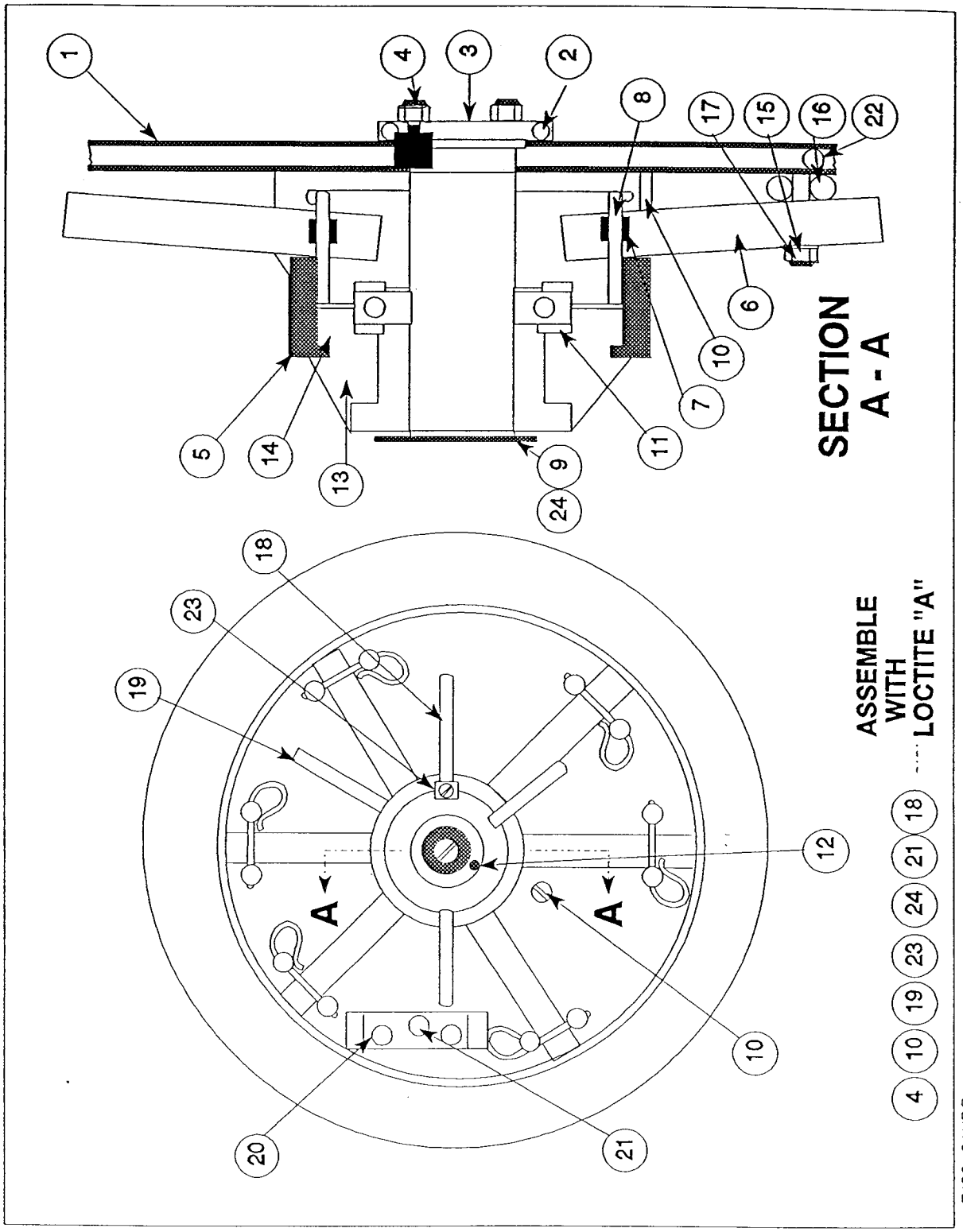

Figure 9. M-138 Sterilizer, Door Assembly

PARTS LIST, FIGURE 9

Ref Nº	Source	Part Nº	Description	Quantity
9-	ETC	C300-906-2	Door Assembly	Ref
9-1	ETC	B300-264-1/2	Plate, Door	1
9-2	ETC	B300-264-2/2	Ring, Seal	1
9-3	ETC	B300-264-3/2	Post, Door	1
9-4	ETC	B300-264-4/2	Screw, Hex Head 1/4-20 x 5/8	3
9-5	ETC	B300-264-5/2	Hub, Retraction	1
9-6	ETC	B300-264-6/2	Arm, Radial	6
9-7	ETC	B300-264-7/2	Spring	6
9-8	ETC	B300-264-8/2	Pin, Roll	6
9-9	ETC	B300-264-9/2	Washer	1
9-10	ETC	B300-264-10/2	Stop	1
9-11	ETC	B300-264-11/2	Bearing, Thrust Ball	1
9-12	ETC	B300-264-26/2	Pin, Spiral	1
9-13	ETC	B300-264-13/2	Handwheel Assembly	1
9-14	ETC	B300-264-14/2	Ring, Retaining	1
9-15	ETC	B300-264-15/2	Spring, Retainer	6
9-16	ETC	B300-264-16/2	Fulcrum	6
9-17	ETC	B300-264-17/2	Post	12
9-18	ETC	B300-264-19/2	Handle	2
9-19	ETC	B300-264-20/2	Rod, Throw Arm	1
9-20	ETC	B300-264-21/2	Hinge, Door	1
9-21	ETC	B300-264-22/2	Screw, Socket Head 5/16-18 x 3/4	3
9-22	ETC	B300-264-23/2	Gasket, Door	1
9-23	ETC	B300-264-24/2	Pin, Alignment	1
9-24	ETC	B300-264-25/2	Screw, Flat Head, 3/8-16 x 3/4	1

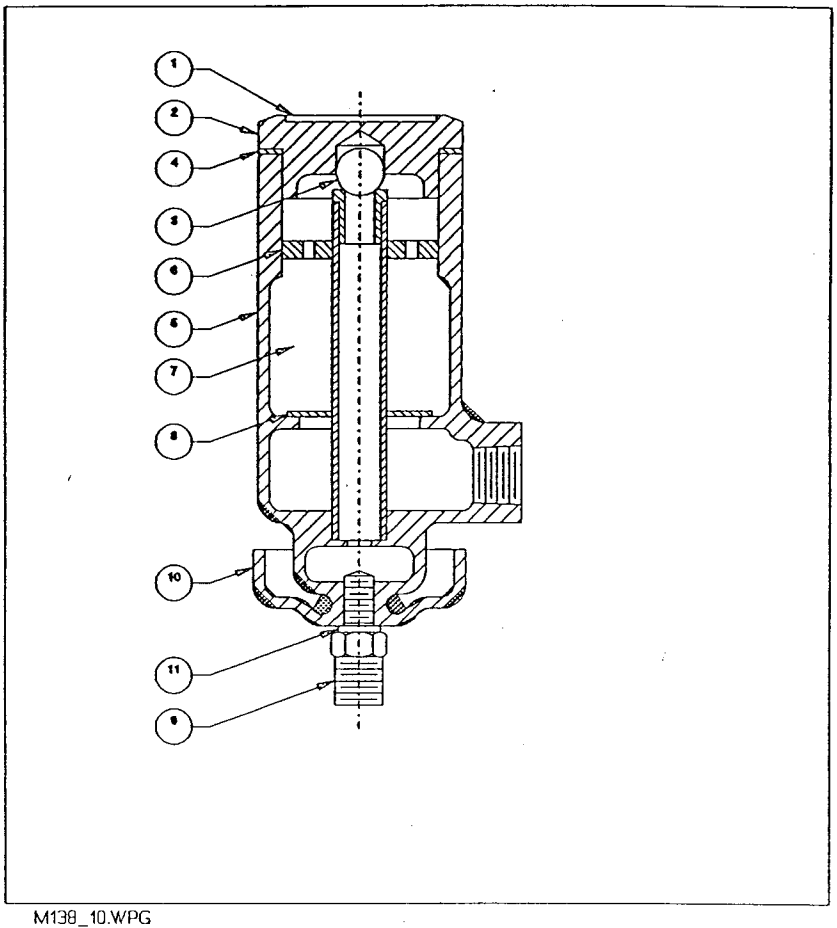

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Figure 10. Vacuum Dryer Assembly.

PARTS LIST, FIGURE 10

Ref Nº	Source	Part Nº	Description	Quantity
10-	ETC	A300-224-17/98	Dryer Assembly	Ref
10-1	ETC	B300-232-18/98	Plate, Name	1
10-2	ETC	B300-232-19/98	Plug, Ball Retainer	1
10-3	ETC	B300-232-20/98	Ball	1
10-4	ETC	B300-232-21/98	Gasket	1
10-5	ETC	B300-232-23/98	Housing Assembly	1
10-6	ETC	B300-232-22/98	Nut, Filter Packing	1
10-7	ETC	B300-232-32/98	Wool, Monel	1
10-8	ETC	B300-232-28/98	Screen	1
10-9	ETC	B300-232-31/98	Stud, Mounting	1
10-10	ETC	B300-232-29/98	Cup, Drip	1
10-11	ETC	B300-232-31	Washer, Lock 5/16 Dia Nominal	1

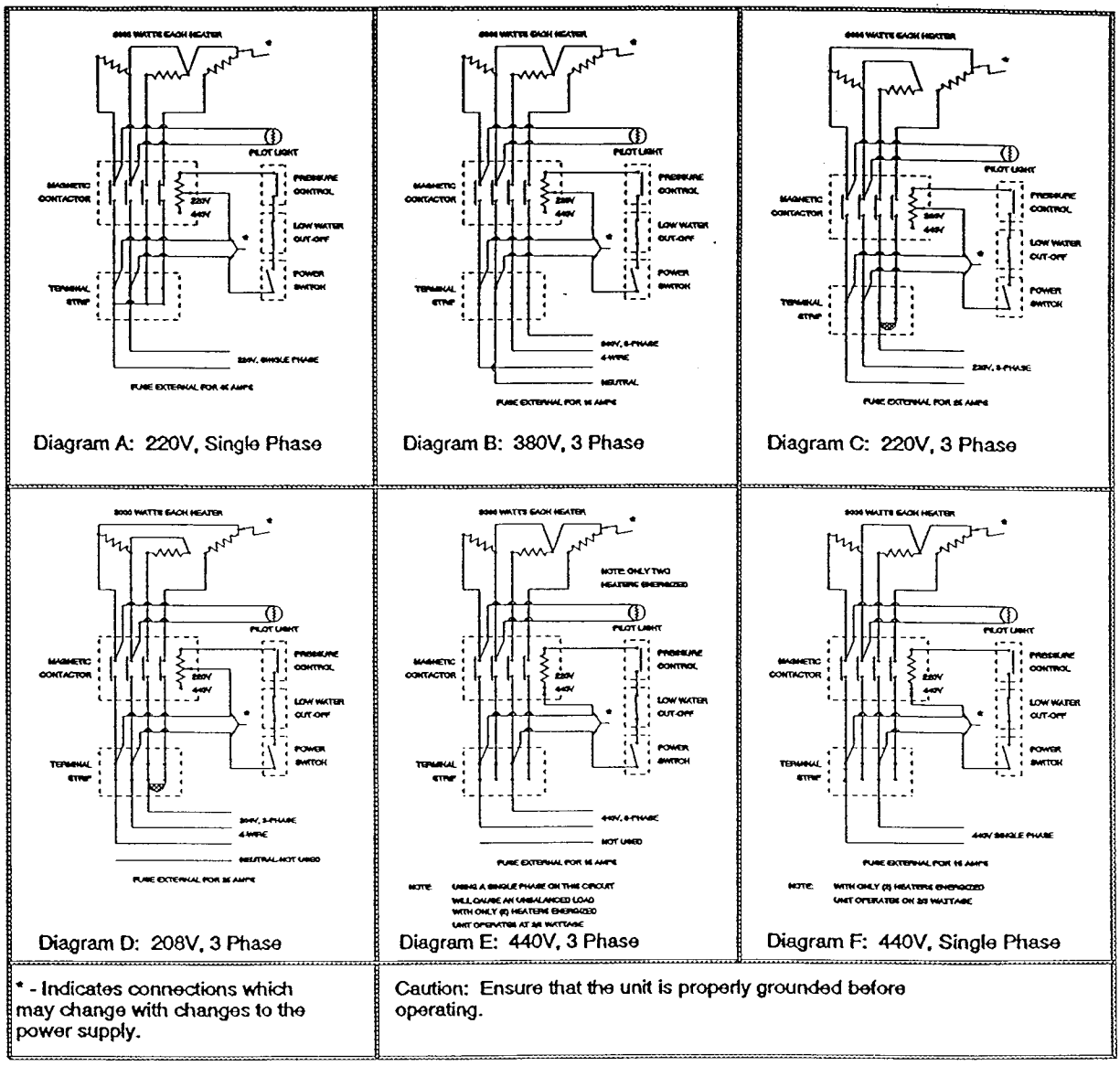

Diagram A: 220V, Single Phase

Diagram B: 380V, 3 Phase

Diagram C: 220V, 3 Phase

Diagram D: 208V, 3 Phase

Diagram E: 440V, 3 Phase

Diagram F: 440V, Single Phase

* - Indicates connections which may change with changes to the power supply.

Caution: Ensure that the unit is properly grounded before operating.

M138_WIR.WPG

Figure 11. Wiring Diagrams.

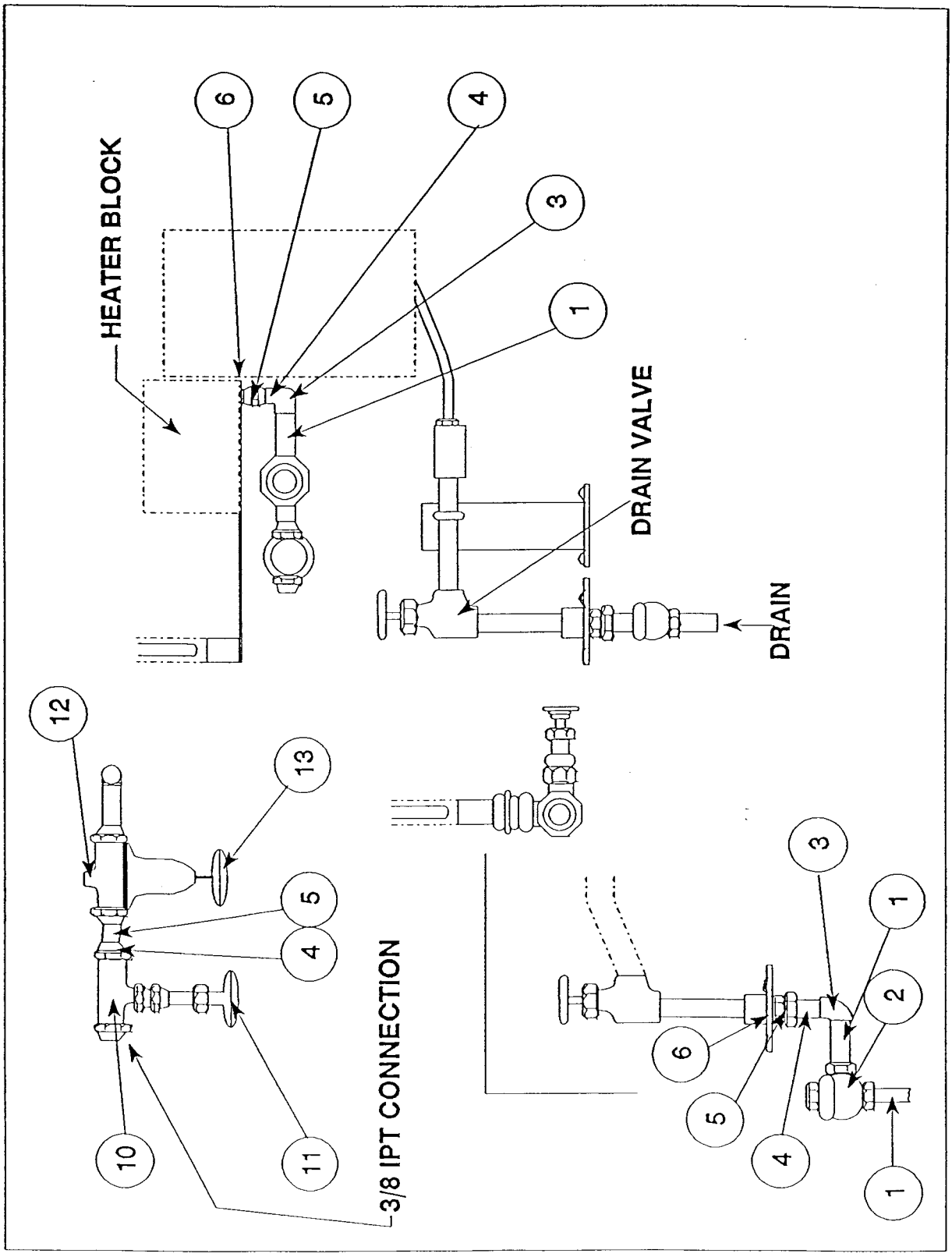

Figure 12. Direct Steam Adapter Kit.

PARTS LIST, FIGURE 12

Ref Nº	Source	Part Nº	Description	Quantity
12-	ETC	C112-011-131	Adapter Kit, Direct Steam	Ref
12-1	ETC	B300-273-1/131	Assembly*	3
12-2	ETC	B300-273-2/131	Nipple 3/8 Dia x 3" Long	1
12-3	ETC	B300-273-3/131	Trap, Chamber Steam 3/8 Dia	2
12-4	ETC	B300-273-4/131	Elbow, Female 90° 3/8 NPT Stud 3/8 Dia	3
12-5	ETC	B300-273-5/131	Nut, Union 3/8 Dia	3
12-6	ETC	B300-273-6/131	Adapter, Assembly	2
12-7	ETC	-		-
12-8	ETC	-		-
12-9	ETC	-		-
12-10	ETC	B300-273-10/131	Valve, Straight Union Globe 3/8	1
12-11	ETC	B300-273-11/131	Handwheel, Steam Supply Valve	1
12-12	ETC	B300-273-12/131	Regulator, Pressure 3/8	1
12-13	ETC	B300-273-13/131	Handwheel, Hi-Low Steam Press. Valve	1

*Note: The Direct Steam Assembly Adapter Kit is not furnished with the Sterilizer for this contract. The kit may be ordered separately if required.